SSPA-1-SR5-CE POWER SPA PACK
SERVICE MANUAL

• by Gecko Electronics Inc. •

Visual step-by-step guide to easily identify & correct technical problems!

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In an attempt to make this manual as useful as possible, it has been presented in two formats. Problem-solving solutions are described with Troubleshooting Flow Charts and also with Step-by-Step Procedures.

The two formats together should provide an overall complete explanation, with flow charts providing an overview of specific problems, and step-by-step procedures giving more detailed information.

TO SUCCESSFULLY TROUBLESHOOT SPA PACK PROBLEMS, IT IS ESSENTIAL TO HAVE AN UNDERSTANDING OF THE OPERATION AND FEATURES OF THE SPA PACK BEING WORKED ON. CONSULT THE OWNER'S MANUAL, SUNRISE SPAS OR GECKO ELECTRONICS FOR DETAILS.

Important Safety Information

WARNING: Risk of electrical shock! All procedures described in this service manual must be performed by qualified personnel only, in accordance with the standards applicable in the country of installation and, whenever possible, with the equipment powered off. When connecting the equipment, always refer to the wiring diagram affixed underneath the power box cover of your spa pack! This diagram always prevails over the wiring diagram at the end of this manual.

All information given is subject to technical modifications without prior notice.

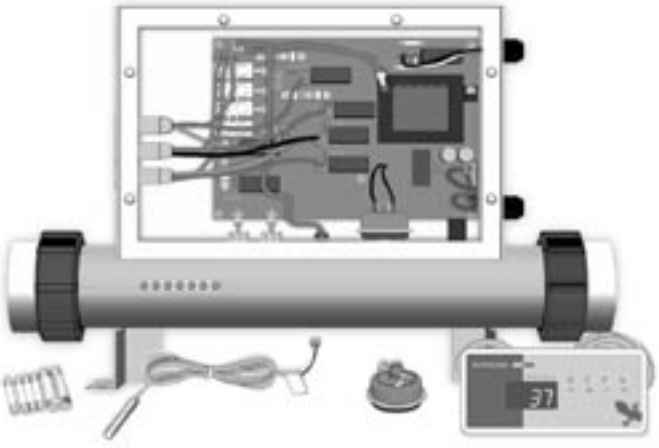
Tools & Parts

The tools, test equipment and components needed to carry out SSPA-1 power spa pack service calls.

Required tools:

Pliers
Phillips & flat screwdrivers
9 mm (11/32") nut driver
6 mm (1/4") open end wrench
10 mm (3/8") open end wrench
Jumper cable
Multimeter
GFCI tester & digital thermometer (optional)

Required pack parts:



Fuses
Regulation sensor
SSPA-1-SR5-CE complete pack
Pressure Switch
Keypad

Gecko Electronic Inc. sells Professionnal Repair Kits that include everything needed for SSPA-1 power spa pack servicing. For more information, go to the last page of this manual.

Keypad

SSPA-1 single- and dual-speed pump systems are available with TSC-18 & TSC-19 keypads.

All the procedures and instructions described in the next pages are applicable to SSPA-1 systems equipped with TSC-18 & TSC-19 keypads.

TSC-18 keypad
127 mm • 64 mm (5" • 2 1/2")

TSC-19 keypad
177 mm • 83 mm (7" • 3 1/4")

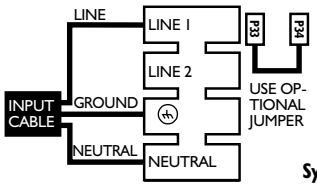
TSC-19 keypad
177 mm • 83 mm (7" • 3 1/4")

Electrical Wiring

Proper wiring of the electrical service box, GFCI and spa pack terminal block is essential.

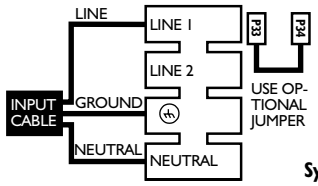
- Make a visual inspection for signs of miswiring. Refer to the supplied wiring diagram. Call an electrician if necessary.

1 x 230 VAC (32 A) input supply wiring



System programmed for Cu 1!

1 x 230 VAC (16 A) input supply wiring

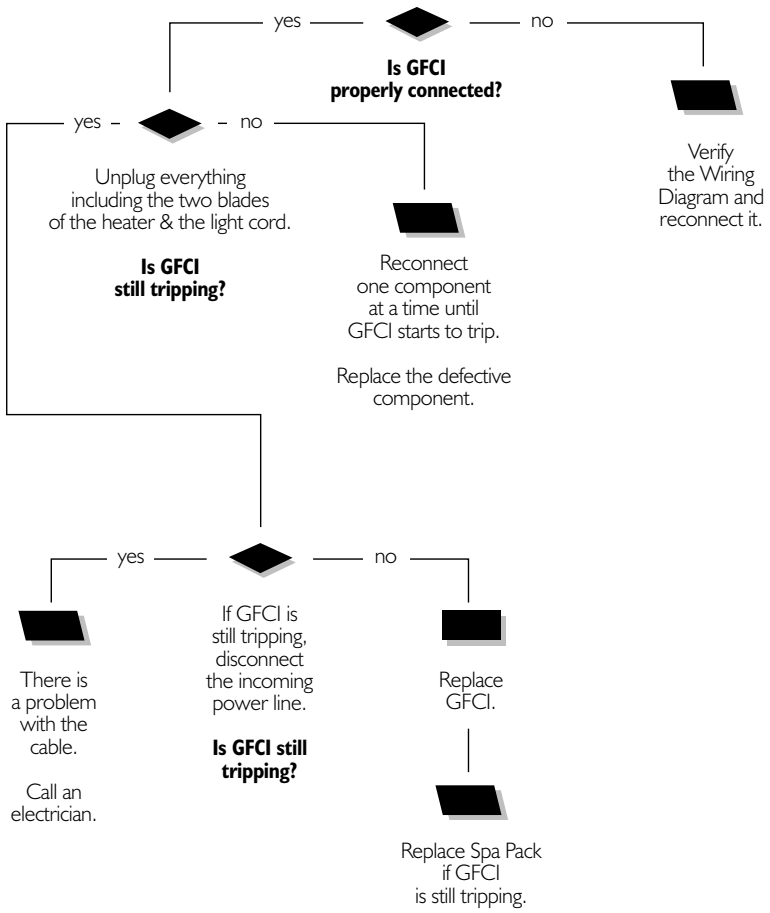


System programmed for Cu 2!

GFCI Flow Chart

If GFCI trips, follow this Troubleshooting Flow Chart to identify the problem:

A Ground Fault Circuit Interrupter (GFCI) is an electrical safety protection device that guards against electrocution by monitoring and reacting to incoming and outgoing current levels. The spa may or may not be installed with a GFCI depending on local electrical standards and laws.


yes
no
Is GFCI properly connected?
Verify the Wiring Diagram and reconnect it.
yes
no
Unplug everything including the two blades of the heater & the light cord.
Is GFCI still tripping?
Reconnect one component at a time until GFCI starts to trip.
Replace the defective component.
yes
no
There is a problem with the cable.
Call an electrician.
If GFCI is still tripping, disconnect the incoming power line.
Is GFCI still tripping?
Replace GFCI.
Replace Spa Pack if GFCI is still tripping.

GFCI Trips!

If all connections are made, but nothing seems to be working, you probably have a power supply problem. Carry out the following tests to identify and correct the problem:

Note that for new installations, GFCI trippings due to miswiring are common. If breaker is wired properly, GFCI trippings may occur when total amount of current drawn by spa exceeds breaker rating.

A current leak to ground will also cause GFCI to trip. If any of the components is faulty and a leak occurs, GFCI will trip to prevent electrocution.

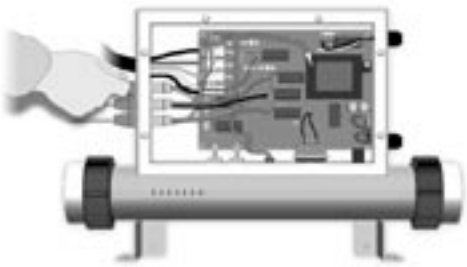
There are different GFCI models on the market.

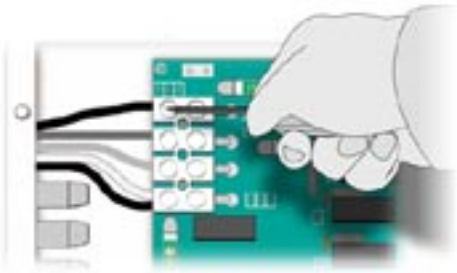
1• Verify if GFCI is properly connected.

2• If it is not, verify GFCI wiring diagram and reconnect it.

GFCI Trips!

If GFCI continues to trip, carry out the following tests to correct the problem:





1• If GFCI is properly connected, but still tripping, unplug all outputs including the two blades of the heater & the light cord.

2• If GFCI still trips, replace Spa Pack.

If it stops tripping, reconnect one component at a time until GFCI starts to trip. Replace defective component.

3• If the problem is not solved yet, disconnect incoming power lines.

If GFCI still trips, there must be a cable problem.

Call an electrician.

4• If GFCI stops tripping, Replace GFCI.

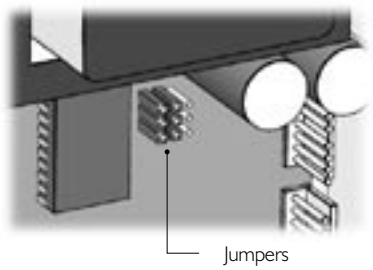
5• If GFCI trips again, replace Spa Pack.

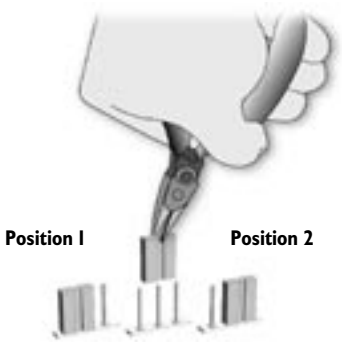
Jumper Position

It is possible to change some parameters of a SSPA-1 Spa Pack by configuring specific jumpers located on the board.

To access jumpers, first remove the SSPA-1 power box cover.

In some cases, jumper functions may differ from the following. Please check the wiring diagram printed inside the power box cover for your pack's specific functions.





1• The jumpers are located in the lower right section of the board.

2• To change a setting, simply pull the jumper out and replace it in the desired position.

Jumper 1: Current Limiting Option

Jumper 1 is used to limit the current drawn when the 2 pumps are running.

Position 1 (HC):	No restrictions.
Position 2 (LC)*:	The system will not turn the heater on when one pump is in high speed. The Heater marker will flash on the display to indicate that there is a request for more heat but the heater is not allowed to start.

***Mandatory for 120 vac systems**

Jumper 2: Jet Pump 2

This jumper is used to select the temperature unit.

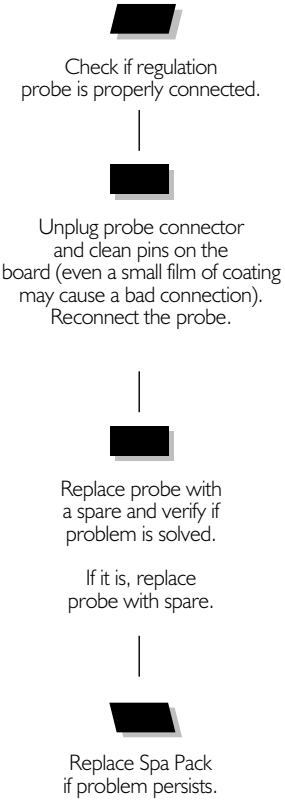
Position 1:	not installed.
Position 2:	**installed**.

Jumper 3: blower

Position 1:	not installed.
Position 2:	**installed**.

Wrong Temperature Flow Chart

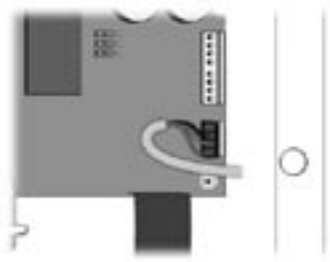
On certain packs, if system detects that temperature is not within normal limits, a highly incorrect temperature will be displayed. Follow Trouble-shooting Flow Chart below to identify the problem:


Check if regulation probe is properly connected.
Unplug probe connector and clean pins on the board (even a small film of coating may cause a bad connection). Reconnect the probe.
Replace probe with a spare and verify if problem is solved.
If it is, replace probe with spare.
Replace Spa Pack if problem persists.

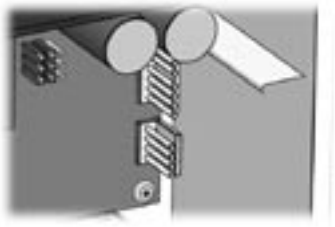
Wrong Temperature Displayed

Wrong temperature on keypad display indicates a problem with regulation sensor. The system is constantly verifying if temperature probe reading is within normal limits.

Note that water temperature must be over 2°C in order to carry out the following steps. Power may remain On.



1• Verify if regulation probe (sensor located in spa) is properly connected.



2• Disconnect probe connector and clean probe connector pins. Even a small film of coating may cause a bad connection.

3• Reconnect probe.

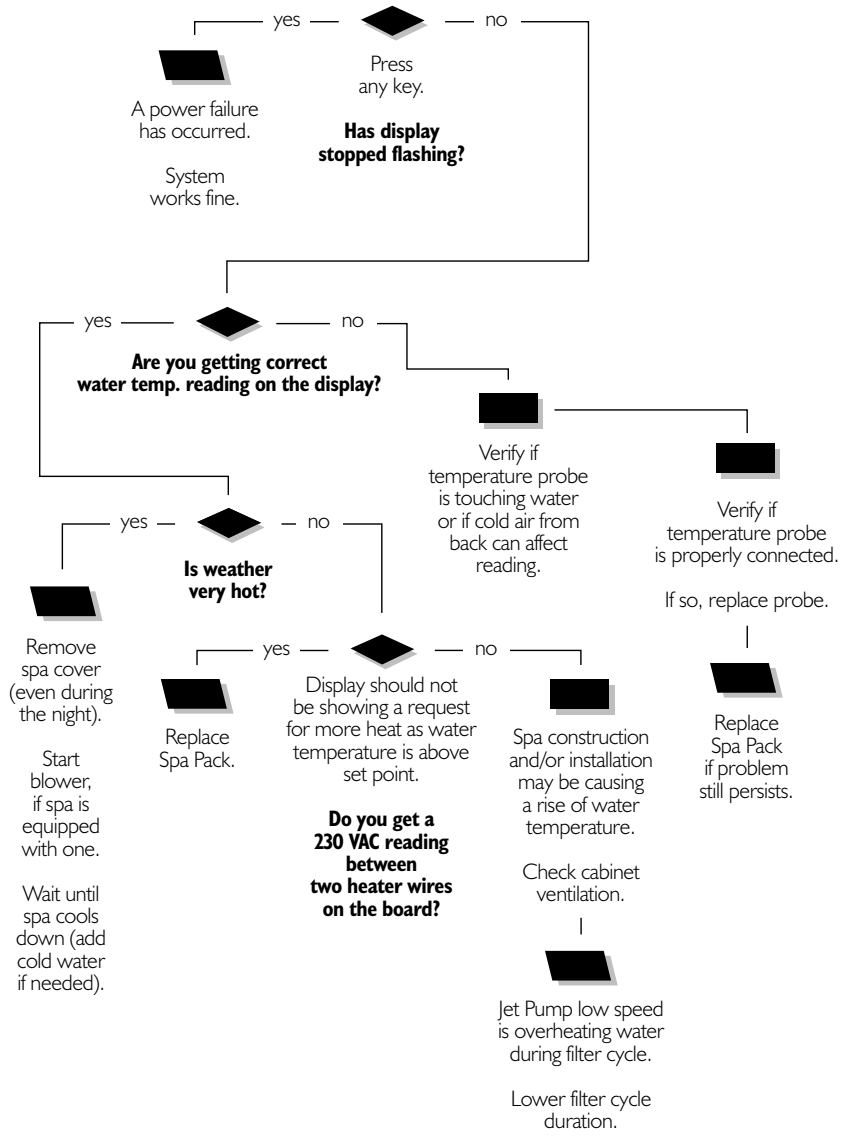
If wrong temperature is still displayed on keypad, replace probe with a spare and place probe head directly in spa water.

If problem is solved, replace probe.

4• Replace Spa Pack if problem persists.

Display Flashing Flow Chart

On certain packs, if system detects temperature at 44°C or higher, the display will start flashing. Follow Troubleshooting Flow Chart below to identify the problem:


yes
no
Press any key.
Has display stopped flashing?
A power failure has occurred.
System works fine.
yes
no
Are you getting correct water temp. reading on the display?
Verify if temperature probe is touching water or if cold air from back can affect reading.
Verify if temperature probe is properly connected.
If so, replace probe.
Replace Spa Pack if problem still persists.
yes
no
Is weather very hot?
Remove spa cover (even during the night).
Start blower, if spa is equipped with one.
Wait until spa cools down (add cold water if needed).
yes
no
Display should not be showing a request for more heat as water temperature is above set point.
Do you get a 230 VAC reading between two heater wires on the board?
Replace Spa Pack.
Spa construction and/or installation may be causing a rise of water temperature.
Check cabinet ventilation.
Jet Pump low speed is overheating water during filter cycle.
Lower filter cycle duration.

Display Is Flashing

If digital thermometer water temperature reading is 44°C or higher and keypad display indicates correct temperature, carry out the following tests:

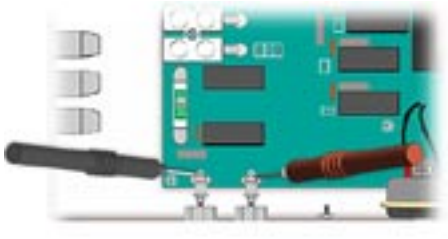
If display stops flashing after pressing a key, this means that a power failure has occurred. System works fine.

If weather is very hot:

1• Remove spa cover (even during the night). Start blower if spa is equipped with one. Wait until spa cools down (add cold water if necessary).

If hot weather is not a factor:

2• Display should not be showing a request for more heat as water temperature is above set point.



3• Remove spa cover. With a volt-meter, read the voltage between the two heater wires on the board.

4• **If you do not read 230 VAC,** check cabinet ventilation first. If problem persists, jet pump low speed may be overheating water during filter cycle.

Enter Programming mode and shorten filter cycle duration.

5• **If you do read 230 VAC,** replace Spa Pack.

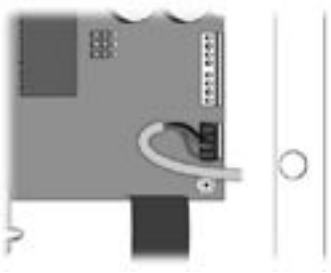
(Refer to "How to Replace the Spa Pack" section of this manual.)

Display Is Flashing

If digital thermometer water temperature reading is 44°C or higher and keypad display is not showing correct temperature, carry out the following tests:

1• Verify if temperature probe is in contact with water and if cold air from the back could be affecting readings.

Use foam to isolate probe from cold air if that is the problem.



2• Make sure temperature probe is properly connected.

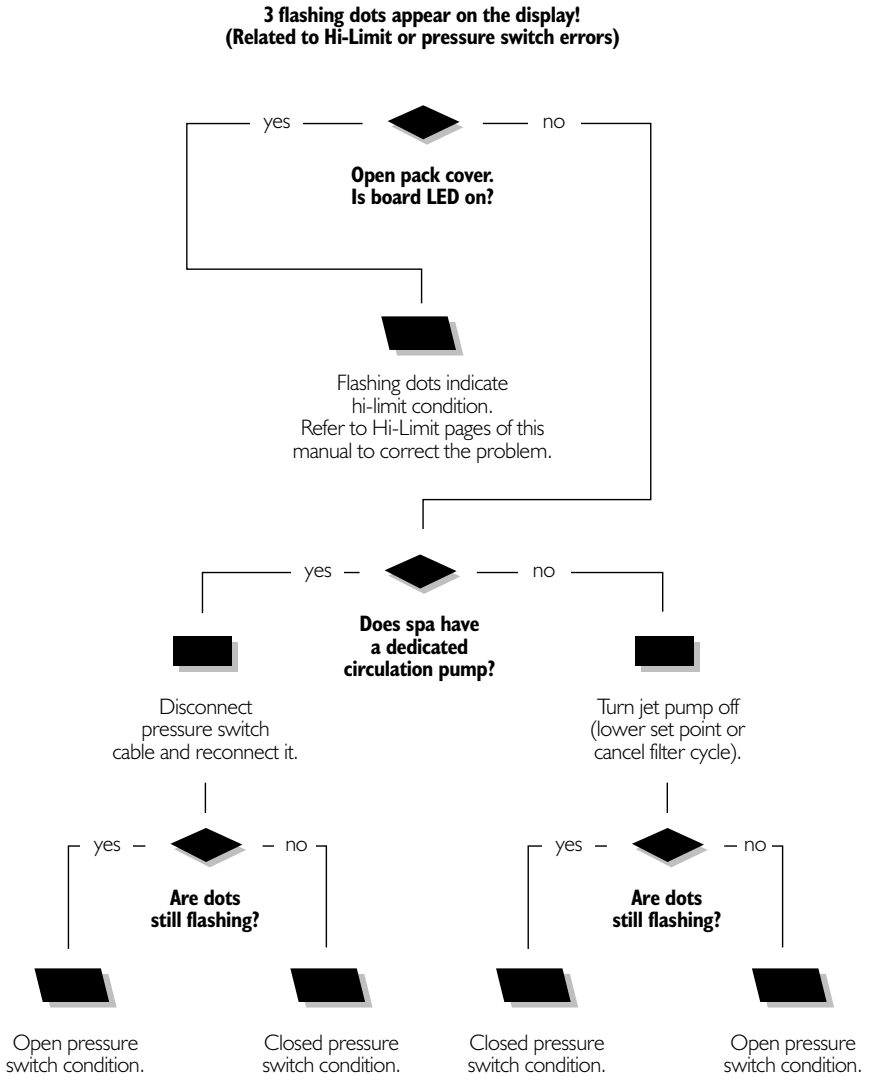
If it is, replace probe.

3• Replace Spa Pack if display is still flashing.

(Refer to "How to Replace the Spa Pack" section of this manual.)

Flashing Dots Flow Chart

If 3 flashing dots appear on keypad display, follow Troubleshooting Flow Chart below to identify the problem:



Flashing Dots Displayed!

If 3 flashing dots appear on keypad display, carry out the following tests to correct the problem:

Flashing dots

1• Verify if board LED is on. If so, refer to Hi-Limit pages of this manual.

2• If not, check if the system is equipped with a circulation pump. If it is, disconnect pressure switch cable and reconnect it.

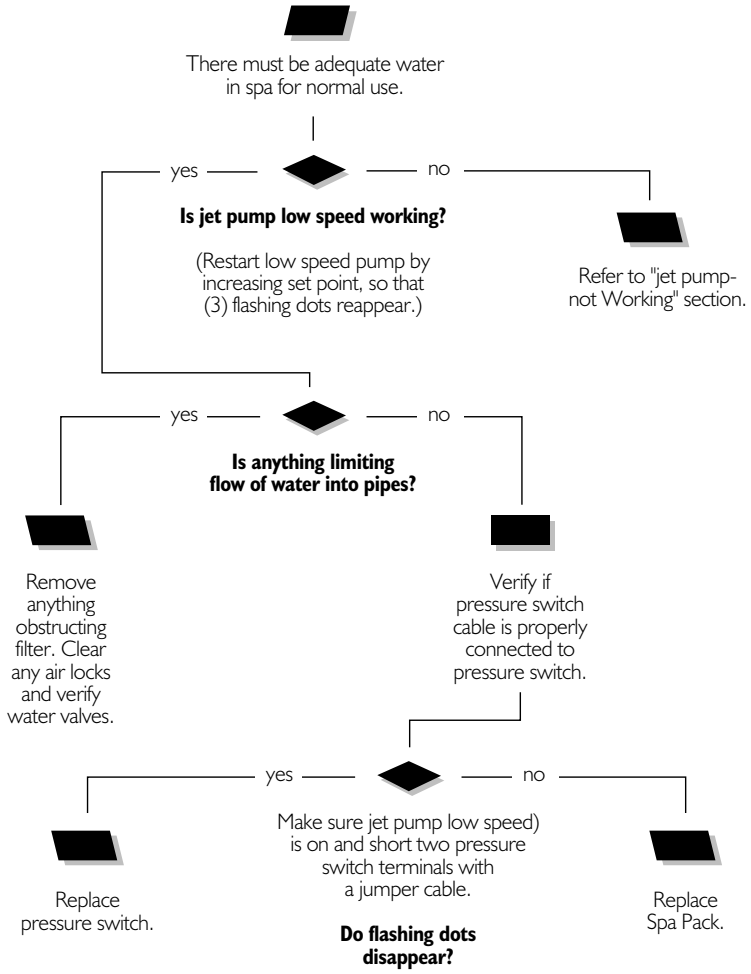
3• If flashing dots are still displayed, you have an open pressure switch condition. If not, you have a closed pressure switch condition.

4• If system is not equipped with a circulation pump, turn jet pump off. Lower set point or cancel filter cycle.

5• If flashing dots are still displayed, you have a closed pressure switch condition. If not, you have an open pressure switch condition.

Open Pressure Switch Flow Chart

If open pressure switch error condition occurs (problem with the pressure switch: jet pump is on but no water pressure detected), follow Trouble-shooting Flow Chart below to identify the problem:


There must be adequate water in spa for normal use.
yes
no
Is jet pump low speed working?
(Restart low speed pump by increasing set point, so that (3) flashing dots reappear.)
Refer to "jet pump-not Working" section.
yes
no
Is anything limiting flow of water into pipes?
Remove anything obstructing filter. Clear any air locks and verify water valves.
Verify if pressure switch cable is properly connected to pressure switch.
yes
no
Make sure jet pump low speed) is on and short two pressure switch terminals with a jumper cable.
Do flashing dots disappear?
Replace pressure switch.
Replace Spa Pack.

Open Pressure Switch Error Condition

Open pressure switch error condition indicates a pressure switch problem. If system does not detect any pressure when jet pump is manually or automatically turned on, an open pressure switch error condition will occur.

There must be enough water in the spa for normal operations. System may detect an open pressure switch error condition if spa filter is dirty or if something restricts flow of water in piping.

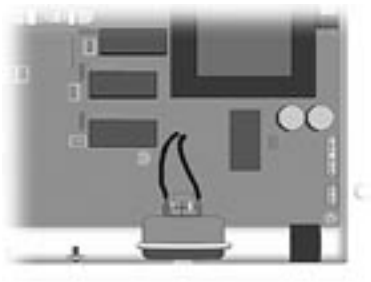
The heater will automatically shut down when an open pressure switch error condition occurs.

Power may remain On when the following steps are carried out.

1• Verify if jet pump is working. If pump is not working, refer to jet pump section of this manual.

2• Clean filter and check for air blockages, closed gate valves or anything that could be restricting water flow.

3• Verify if pressure switch cable is properly connected to pressure switch.



4• Ensure adequate water flow in the heater and short two pressure switch terminals with jumper cable.

5• **If open pressure switch error condition disappears,** replace switch.

6• **If open pressure switch error condition persists,** the problem may be either with switch cable or board.

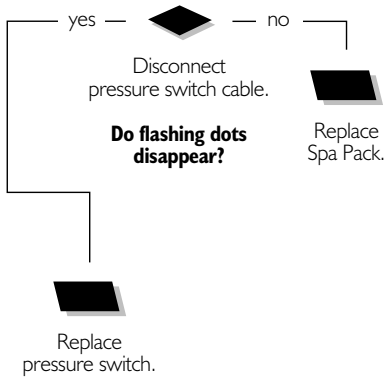
7• Replace Spa Pack if open pressure switch error condition still persists.

(Refer to "How to Replace the Spa Pack" section.)

Closed Pressure Switch Flow Chart

If closed pressure switch error condition occurs, follow Troubleshooting Flow Chart below to identify problem (usually pressure switch problem - jet pump is off but water pressure is detected):

PUMP SYSTEM:
3 dots flashing - low speed pump off

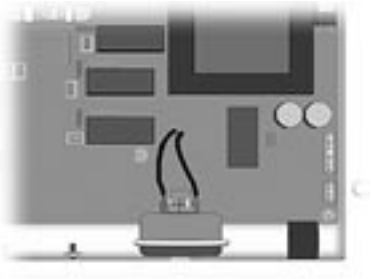


Closed Pressure Switch Error Condition

Closed pressure switch error condition indicates a pressure switch problem. If the system detects any pressure when the pump is off, a closed pressure switch error condition will occur.

Flashing dots must appear on keypad display and jet pump low speed must be turned OFF

Power may remain On while the following steps are carried out.



1• Disconnect pressure switch cable

2• If flashing dots disappear, replace pressure switch.

3• If flashing dots are still displayed, reconnect pressure switch cable.

4• Replace pressure switch if flashing dots still appear after reconnecting pressure switch cable.

5• Replace Spa Pack if flashing dots do not reappear on keypad display. (Refer to "How to Replace the Spa Pack" section of this manual.)

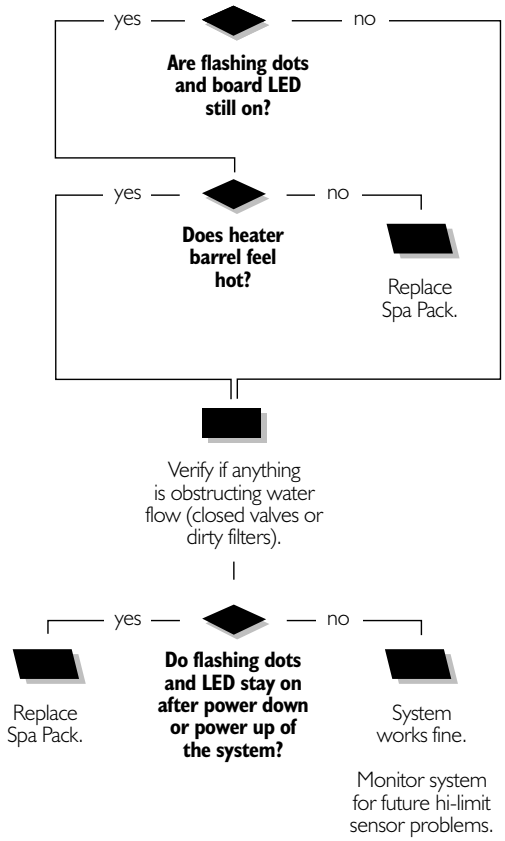
Hi-Limit Flow Chart

If 3 flashing dots appear on keypad display and board LED is on (potential Hi-Limit sensor problem), follow Troubleshooting Flow Chart below to identify the problem:

The Hi-Limit error is related to the Hi-Limit sensor. This means that the system has shut the heater down because water temperature at the heater barrel has reached 48˚C.

Turn GFCI off then on between each step to reset the system.

Replace Spa Pack only if the hi-limit error condition is not removed by resetting GFCI after the initial (3) dots and board LED are seen, and (3) dots and board LED return.


yes
no
Are flashing dots and board LED still on?
yes
no
Does heater barrel feel hot?
Replace Spa Pack.
Verify if anything is obstructing water flow (closed valves or dirty filters).
yes
no
Do flashing dots and LED stay on after power down or power up of the system?
Replace Spa Pack.
System works fine.
Monitor system for future hi-limit sensor problems.

Hi-Limit Error Condition

The Hi-Limit error condition is related to the Hi-Limit sensor. Carry out the following tests to identify and correct the problem:

The Hi-Limit error is related to the Hi-Limit sensor. This means that the system has shut the heater down because water temperature at the heater barrel has reached 48˚C.

Turn GFCI off then on between each step to reset the system.

Replace Spa Pack only if the hi-limit error condition is not removed by resetting GFCI after the initial (3) dots and board LED are seen, and (3) dots and board LED return.

1• Check if flashing dots and board LED are displayed.

2• If so, check if heater barrel feels hot.

If it's hot, verify if anything is obstructing the flow of water (closed valves or dirty filter).

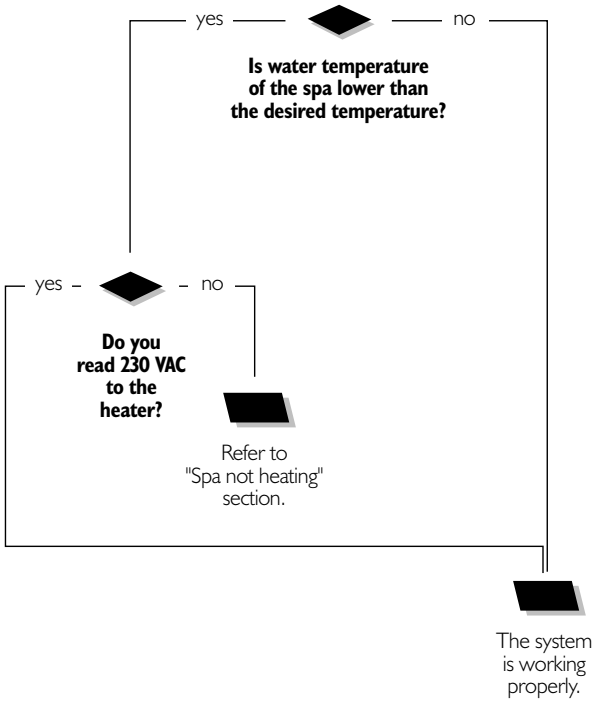
3• If it's not, replace Spa Pack.

4• If flashing dots and board LED are not displayed, verify if anything is obstructing the flow of water (closed valves or dirty filter).

5• Power your spa up or down. If flashing dots and LED are still displayed, replace Spa Pack.

Smart Winter Mode Chart

If jet pump has started up on several occasions and "AFP" alternates with water temperature on display, follow this Troubleshooting Flow Chart to identify the problem:

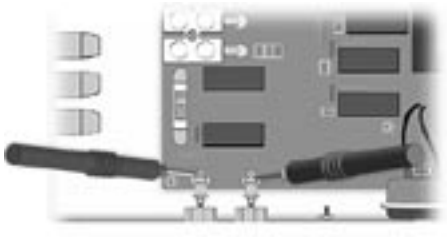

yes
no
Is water temperature of the spa lower than the desired temperature?
yes
no
Do you read 230 VAC to the heater?
Refer to "Spa not heating" section.
The system is working properly.

Smart Winter Mode

If jet pump has started up several times and "AFP" alternates with water temperature on display, the system has detected water cold enough to freeze the pipes and has gone into the protective Smart Winter Mode.

An irregularly flashing "Filter Cycle" indicator means that the system has stopped filtering after 3 hours because water temperature exceeds Set Point by more than 1°C. If the temperature cools down before the scheduled end of the cycle, filtering will resume for the remainder of the programmed cycle duration.

1• With a digital thermometer, verify the temperature of the water.



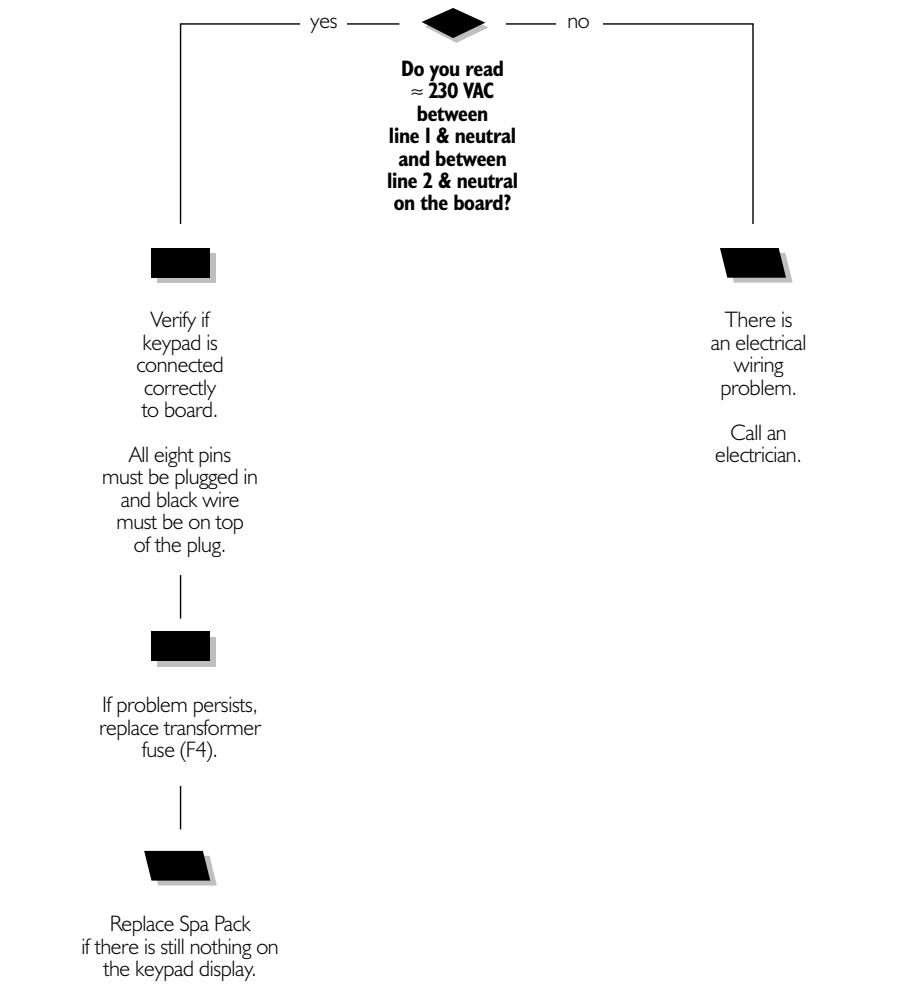
2• If the water temperature is lower than the desired temperature, measure the voltage to the heater.

If your reading is approx. ≈230 VAC, Smart Winter Mode is working properly.

If you do not read ≈230 VAC, refer to the "Spa not heating" section of this manual.

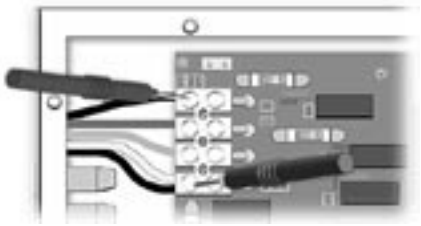
"Nothing Works!" Flow Chart

If nothing seems to work, follow Troubleshooting Flow Chart below to identify the problem:


yes
no
Do you read ≈ 230 VAC between line 1 & neutral and between line 2 & neutral on the board?
Verify if keypad is connected correctly to board.
All eight pins must be plugged in and black wire must be on top of the plug.
If problem persists, replace transformer fuse (F4).
Replace Spa Pack if there is still nothing on the keypad display.
There is an electrical wiring problem.
Call an electrician.

Nothing Works!

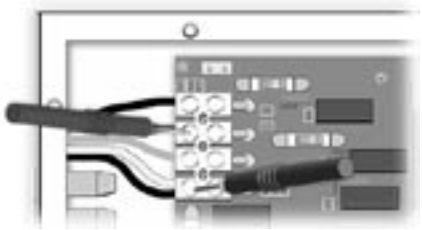
If the equipment is connected but nothing seems to work, the power supply must be defective. Refer to the "Power & Ground Check" section of this manual. If required, proceed as follows:



1• On the power supply terminal block, measure the voltage between Line 1 (L1) and neutral.

You should read ≈230 VAC.

Note: If necessary, refer to the supplied wiring diagram!



2• Measure the voltage between Line 2 (L2) and neutral.

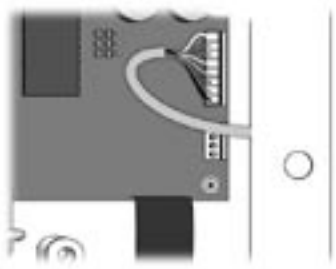
You should read ≈230 VAC.

3• If you do not get good readings, the electrical wiring must be defective.

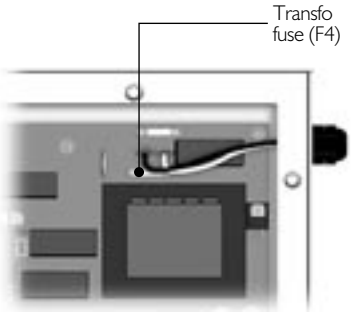
Call an electrician!

Nothing Works!

If you are getting good voltage readings, but nothing seems to work, carry out the following tests to correct the problem:



1• Verify if keypad is correctly connected to the board.

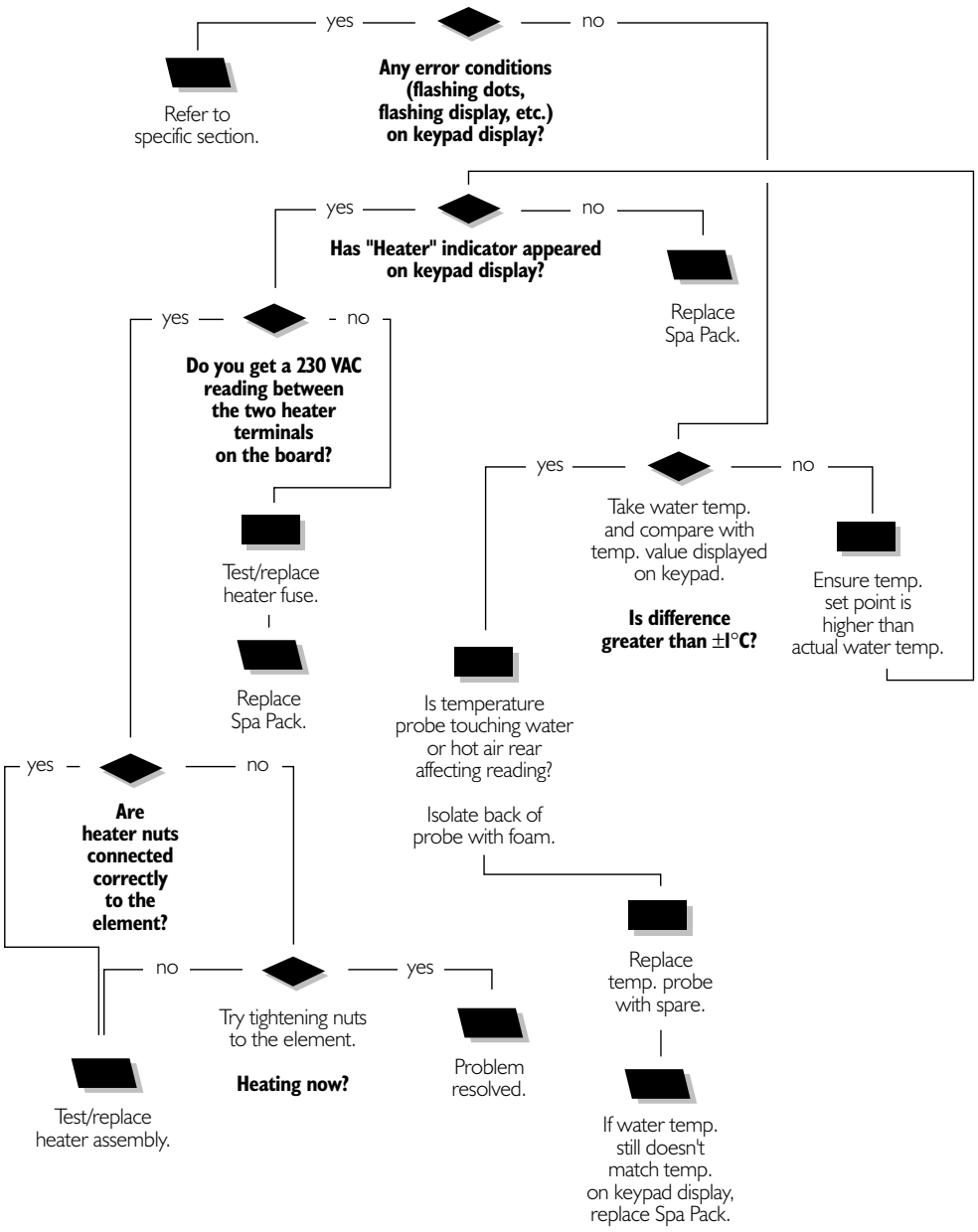


2• If problem persists, replace transformer fuse (F4).

3• If nothing works, replace Spa Pack.

"Spa Not Heating" Flow Chart

If the spa does not seem to be heating the water, follow Troubleshooting Flow Chart below to identify the problem:


yes
no
Refer to specific section.
Any error conditions (flashing dots, flashing display, etc.) on keypad display?
yes
no
Has "Heater" indicator appeared on keypad display?
Replace Spa Pack.
yes
no
Do you get a 230 VAC reading between the two heater terminals on the board?
Test/replace heater fuse.
Replace Spa Pack.
yes
no
Take water temp. and compare with temp. value displayed on keypad.
Is difference greater than ±1°C?
Ensure temp. set point is higher than actual water temp.
Is temperature probe touching water or hot air rear affecting reading?
Isolate back of probe with foam.
Replace temp. probe with spare.
If water temp. still doesn't match temp. on keypad display, replace Spa Pack.
yes
no
Are heater nuts connected correctly to the element?
no
yes
Try tightening nuts to the element.
Heating now?
Problem resolved.
Test/replace heater assembly.

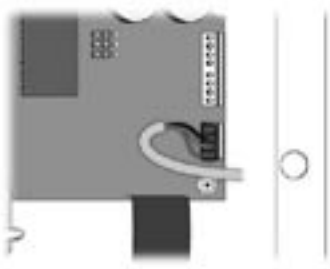
Spa Is Not Heating!

If the spa does not appear to be heating the water, carry out the following tests to correct the problem:

1• Check for an error conditions on keypad display. If there is one, refer to section indicated by the error condtions.

2• If there is no error, use a digital thermometer to take water temperature and compare your reading with the temperature value on the keypad display.

If values are different (±2°F), verify if sensor is touching water or if hot air from rear could be affecting readings.

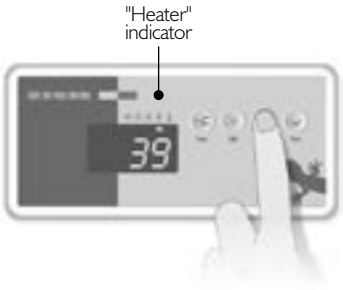


Use foam to isolate behind the probe.

3• Replace temperature probe with a spare one.

4• If spa is still not heating, replace Spa Pack.

5• If values are not different, try to increase temperature by raising temperature set point. Press **Heat** key to increase set point.



6• Verify if "Heater" indicator appears on the display.

"Heater" indicator lights up when heater is on. It will flash if more heat has been requested, but heater has not yet started or if system is in LC mode (see Low Level section).

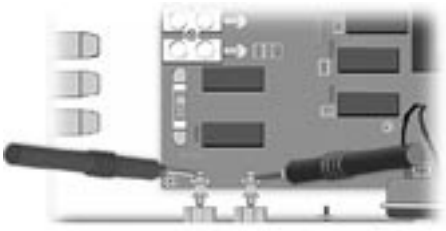
If "Heater" indicator appears on the display, refer to the **next** page.

If "Heater" indicator does not appear on the display, replace Spa Pack.

Spa Is Not Heating!

If "Heater" indicator appears on the display, but spa is still not heating, carry out the following tests to correct the problem:

If "Heater" indicator lights up on the display:



1 • Remove cover and measure voltage between the two heater screws on the Spa Pack.

Replace Spa Pack if you are not getting a reading of ≈230 VAC.

2 • If voltage reading is correct, verify if heater nuts are properly connected to the element.

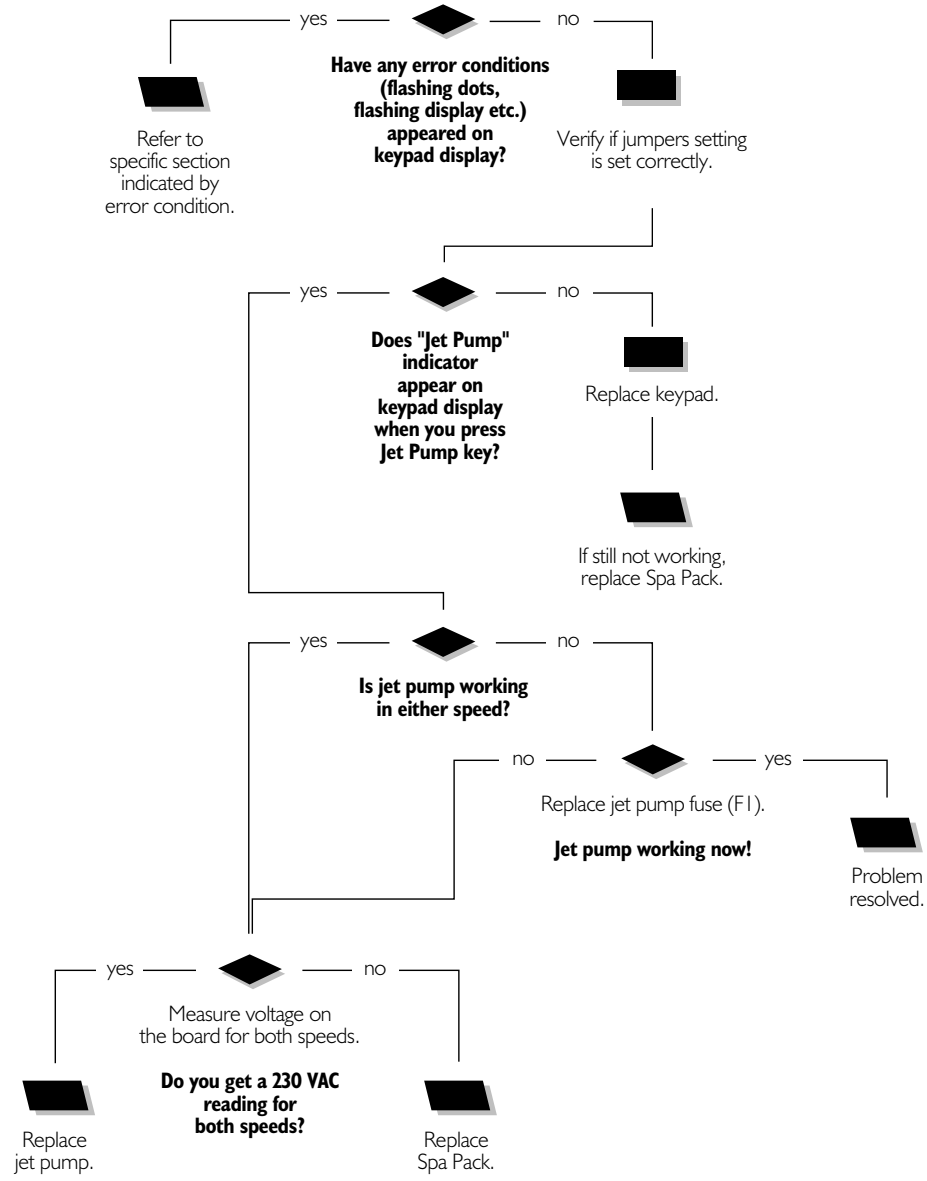
If not, tighten nuts to the element.

3 • If problem persists, test/replace the heater assembly.

Jet Pump 1 Flow Chart

If jet pump is not working, follow Troubleshooting Flow Chart below to identify the problem:

Jet pump speeds and use are determined by spa specifications and jumper settings.


yes
no
Have any error conditions (flashing dots, flashing display etc.) appeared on keypad display?
Refer to specific section indicated by error condition.
Verify if jumpers setting is set correctly.
yes
no
Does "Jet Pump" indicator appear on keypad display when you press Jet Pump key?
Replace keypad.
If still not working, replace Spa Pack.
yes
no
Is jet pump working in either speed?
no
yes
Replace jet pump fuse (F1).
Jet pump working now!
Problem resolved.
yes
no
Measure voltage on the board for both speeds.
Do you get a 230 VAC reading for both speeds?
Replace jet pump.
Replace Spa Pack.

Jet Pump 1 Does Not Work!

If jet pump is not working, carry out the following tests to correct the problem:

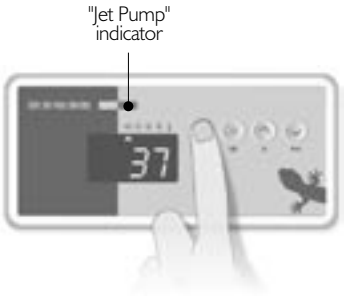
To increase the life of the relay, we use a "snubber" circuit on the pump relay. With this type of circuit, if no jet pump is connected to an output and relays are open, the voltmeter will continue reading around 60 volts. This is normal.

It is important to measure voltage when jet pump is connected to pack. Power must remain On.

Note that "Jet Pump" indicator lights up when Jet pump and/or blower are manually activated.

1• Check for an error condition on keypad display. If there is one, refer to specific section indicated by error condition.

2• Also, verify that jumper setting is set correctly (refer to jumper setting section for more info).



3• Verify if "Jet Pump" indicator appears on keypad display when you press **Jet Pump 1** key.

4• If "Jet Pump" indicator does not appear, use a spare keypad to verify if keypad is defective.

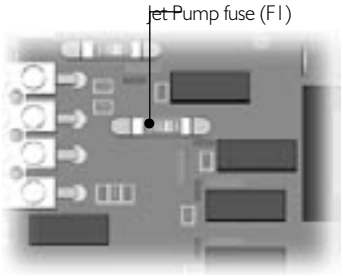
If it is, replace keypad.

If not, replace Spa Pack.

5• If "Jet Pump" indicator appears when **Jet Pump 1** key is pressed, verify if jet pump works in any of the speeds.

Jet Pump 1 Does Not Work!

If jet pump does not work in either speed, carry out the following tests to correct the problem:



1• If jet pump still does not work, replace jet pump fuse (F1).

2• If replacing the fuse is not effective, take voltage reading on the Spa Pack.

Turn jet pump to high speed and take voltage reading between blue and brown wire connectors:
230 VAC jet pump: P7 & P12

Your reading shoud be: ≈230 VAC

3• Turn jet pump to low speed and take voltage reading between blue and black wire connectors:
230 VAC jet pump: P7 & P14

Your reading shoud be: ≈230 VAC

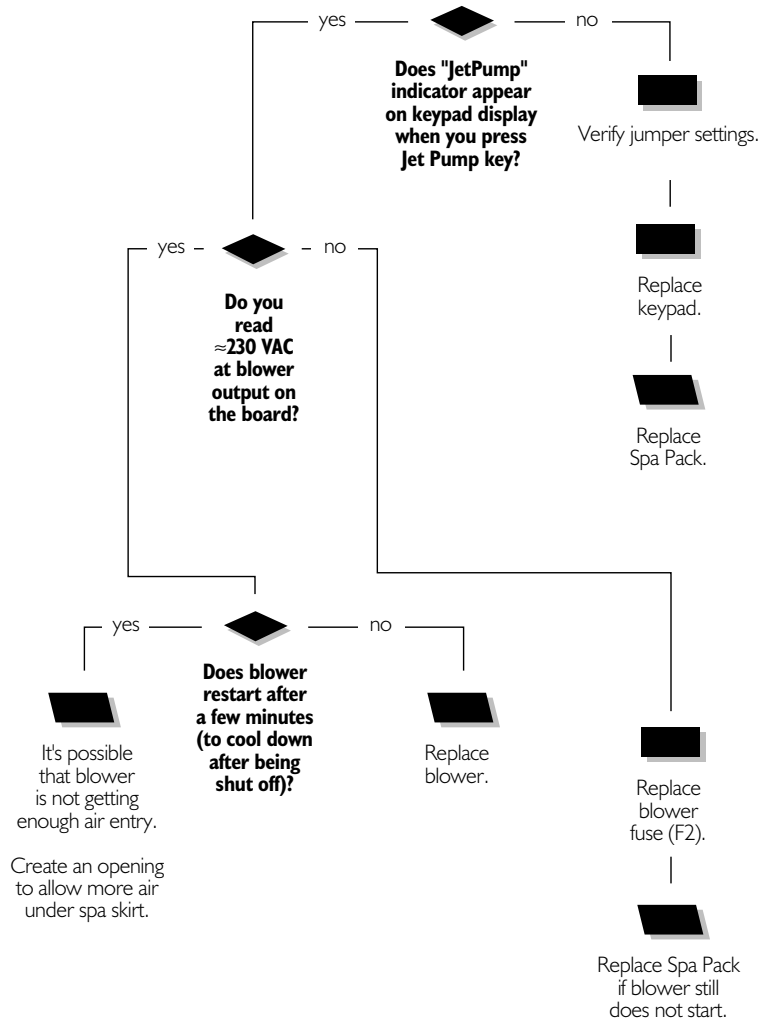
4• If voltage is as it should be, replace jet pump.

5• If not, replace Spa Pack.

Blower Flow Chart

If blower is not working, follow Troubleshooting Flow Chart below to identify the problem:

"Jet Pump" indicator lights up when jet pump and/or blower are manually activated (Jet Pump key starts pump and blower in a sequence. Refer to SSPA-I-CE User's Manual for sequence details).


yes
no
Does "JetPump" indicator appear on keypad display when you press Jet Pump key?
Verify jumper settings.
Replace keypad.
Replace Spa Pack.
yes
no
Do you read ≈230 VAC at blower output on the board?
yes
no
Does blower restart after a few minutes (to cool down after being shut off)?
It's possible that blower is not getting enough air entry.
Create an opening to allow more air under spa skirt.
Replace blower.
Replace blower fuse (F2).
Replace Spa Pack if blower still does not start.

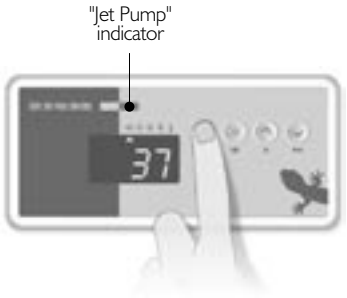
Blower Does Not Work!

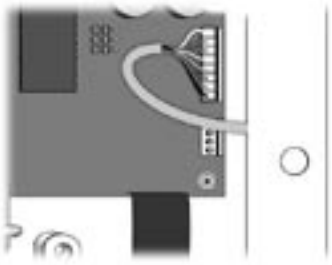
If blower is not working, carry out the following tests to correct problem:

To increase the life of the relay, a "snubber" circuit is used on the blower relay. With this type of circuit, if no blower is connected to an output and relays are open, the voltmeter will continue to get a voltage reading of around 60 volts. This is normal.

It is important to measure voltage when blower is connected to the pack. Power must remain On.

Note that "Jet Pump" indicator lights up when pump and/or blower are manually activated.





1• Verify if "Jet Pump" indicator lights up on keypad display when you press **Jet Pump** key.

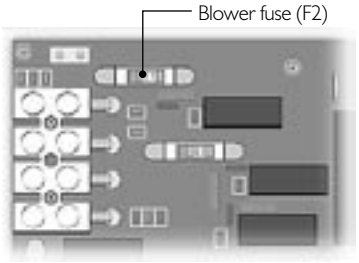
2• Verify if jumper setting for blower **JMP3** is set correctly, (see jumper section).

3• If "Jet Pump" indicator does not appear on keypad display, then, replace keypad.

4• If it still does not work, replace Spa Pack.

Blower Does Not Work!

If "Jet Pump" indicator lights up on keypad display, but blower still is not working, carry out the following tests to correct the problem:



1• If indicator lights up on keypad while blower is on, take voltage reading between blue and brown wire connectors:
230 VAC blower: P9 & P11

You should read ≈230 VAC.

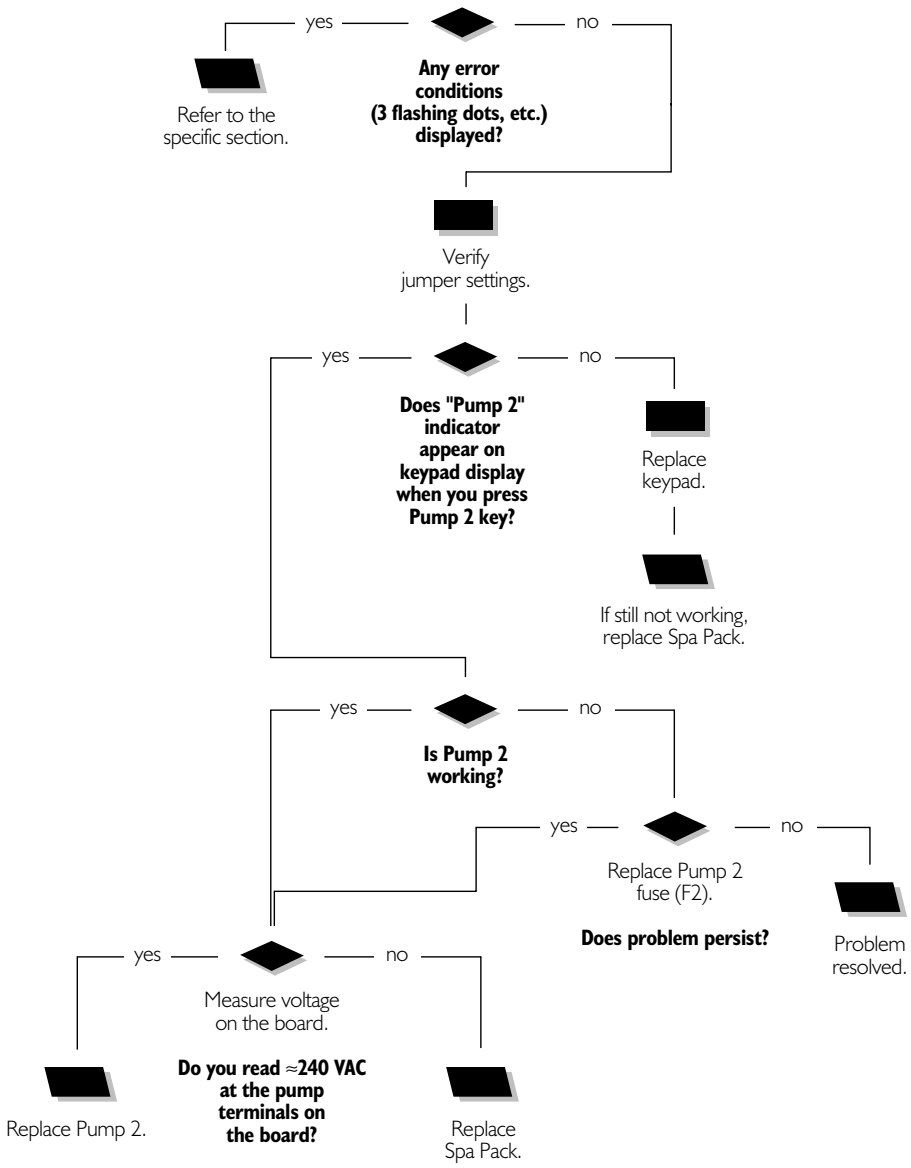
2• Replace blower fuse (F2) if you do not get a high enough voltage reading.

3• Replace Spa Pack if you still are not getting a voltage reading.

4• If voltage is as it should be, replace blower.

Pump 2 Flow Chart

If Pump 2 does not work, follow Troubleshooting Flow Chart below to identify the problem:



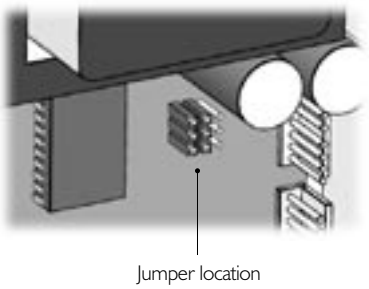
Pump 2 Does Not Work!

If Pump 2 doesn't work, carry out the following tests to correct the problem:

To increase the life of the relay, we use a "snubber" circuit on the pump or blower relay. With this type of circuit, if no pump or blower is connected to an output and relays are open, the voltmeter will continue reading around 60 V. This is normal.

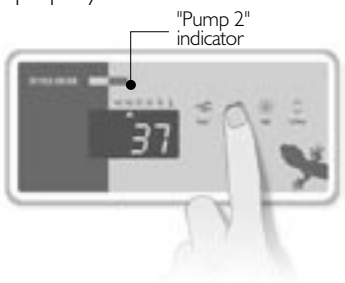
It is important to measure voltage when pump or blower is connected to pack.

1• Check for an error condition on keypad display. If there is one, refer to specific section indicated by error message.

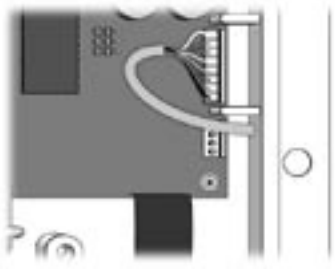


Jumper location

2• Verify that jumper JMP2 is set properly.



3• Verify if "Pump 2" indicator appears on keypad display when you press **Pump 2** key.



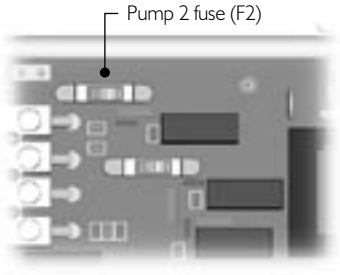
4• If "Pump 2" indicator does not appear, use a spare keypad to verify if keypad is defective.

If it is, replace keypad.

If not, replace Spa Pack.

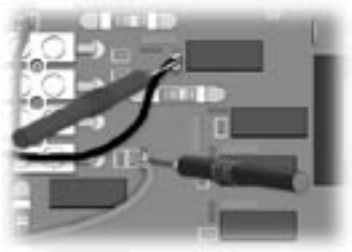
Pump 2 Does Not Work!

If Pump 2 doesn't work, carry out the following tests to correct the problem:



1• Replace Pump 2 fuse (F2).

2• If replacing the fuse is not effective, take voltage reading on the board.



Turn Pump 2 on and take voltage reading between blue and black wire connectors (P9 & P11).

You should read ≈240 VAC.

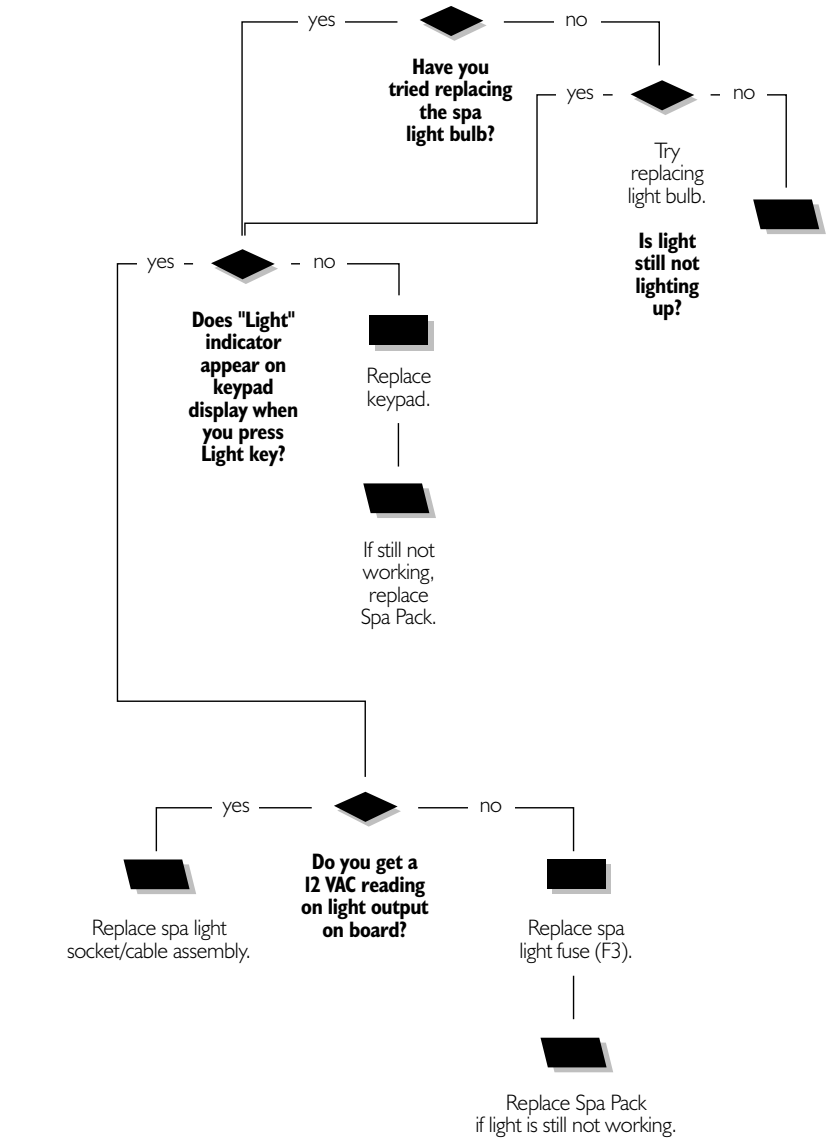
Note: If necessary, refer to the supplied wiring diagram!

3• If voltage reading is correct, replace Pump 2.

4• If voltage reading is not correct, replace Spa Pack.

Spa Light Flow Chart

If spa light does not appear to be working, follow Troubleshooting Flow Chart below to identify the problem:

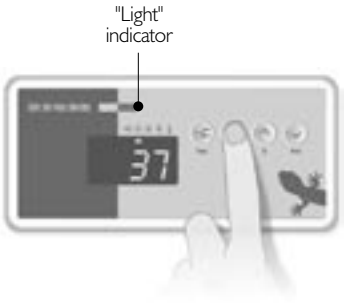

yes
Have you tried replacing the spa light bulb?
no
yes
Try replacing light bulb.
Is light still not lighting up?
no
yes
Does "Light" indicator appear on keypad display when you press Light key?
no
Replace keypad.
If still not working, replace Spa Pack.
yes
Do you get a 12 VAC reading on light output on board?
no
Replace spa light socket/cable assembly.
Replace spa light fuse (F3).
Replace Spa Pack if light is still not working.

Spa Light Does Not Work!

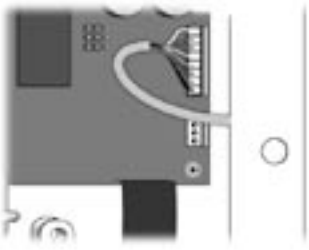
If spa light is not working, carry out the following tests to correct the problem:

It is important to measure voltage when light is connected to pack. Power must remain On.

1• The first step is to replace the spa's light bulb.



2• If light still is not working, verify if "Light" indicator appears on keypad display when you press **Light** key.



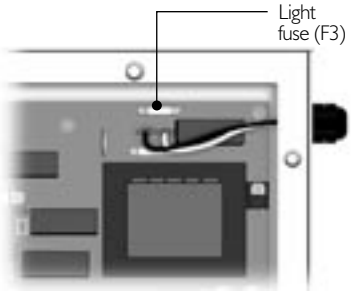
3• If "Light" indicator does not appear, use a spare keypad to verify if spa keypad is defective.

If it is, replace keypad.

If not, replace Spa Pack.

4• If "Light" indicator appears, but light still is not working, remove cover and measure voltage between two light wires on the board (P22 & P23).

If you get ≈12 VAC, replace light socket/cable assembly.



5• If you are not getting a voltage reading, replace light fuse (F3) on the board.

6• If problem persists, replace Spa Pack.

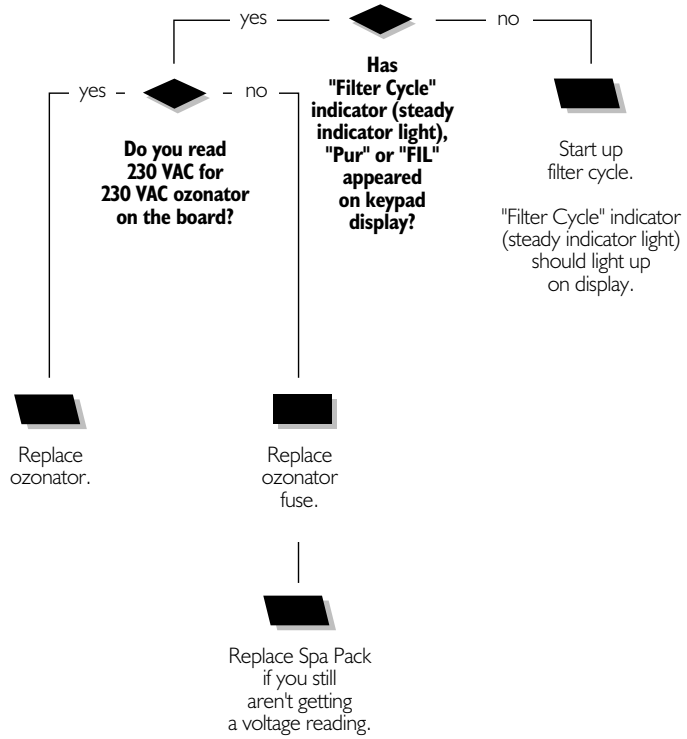
Ozonator Flow Chart

If the ozonator is not working, follow Troubleshooting Flow Chart below to identify the problem:

If water temperature exceeds set point by more than 1˚C for more than three hours, the system will cancel the filter cycle (this feature is not available if system is configured with a circulation pump).

If the user turns on a pump, blower or light during a filter cycle, the cycle will be interrupted and will only resume 40 minutes after the last active output has been turned off (automatically or manually). This delay is to prevent excessive ozonator activation.

During this interval, "Filter cycle" indicator will flash in a different sequence (On: 1/2 sec., Off: 1/2 sec., On: 1/2 sec., Off: 1 1/2 sec.).


yes
no
Has "Filter Cycle" indicator (steady indicator light), "Pur" or "FIL" appeared on keypad display?
Start up filter cycle.
"Filter Cycle" indicator (steady indicator light) should light up on display.
yes
no
Do you read 230 VAC for 230 VAC ozonator on the board?
Replace ozonator.
Replace ozonator fuse.
Replace Spa Pack if you still aren't getting a voltage reading.

Ozonator Does Not Work!

If ozonator is not working, carry out the following tests to correct the problem:

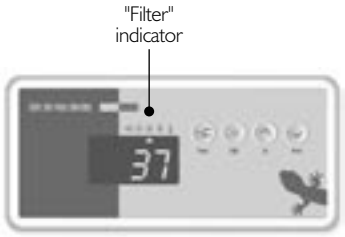
To increase the life of the relay, we use a "snubber" circuit on the ozonator relay. With this type of circuit, if no ozonator is connected to an output and relays are open, the voltmeter will still get a reading of around 60 volts. This is normal.

It is important to take voltage reading when ozonator is connected to pack. Power must remain On.

N.B.: On new systems, if a pump, blower or light is turned on during filter cycle, the cycle will be interrupted and will resume only 40 minutes after the last active output has been turned off. This delay is to prevent excessive ozonator activation.

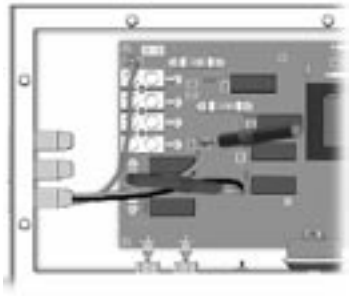
During this time, "Filter Cycle" indicator will flash in a different sequence (3 short, 1 long, 3 short,1 long, etc.).

If the water temperature exceeds the set point by more than 1°C for more than three hours, the system will cancel the filtration.



1• Verify if "Filter Cycle" indicator (steady indicator light), "Pur" or "FIL" appears on keypad.

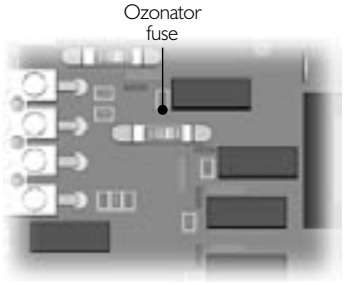
If not, start up a filter cycle (refer to SSPA-1-CE User's Manual).



2• Measure voltage between ozonator blue and brown wire connectors:
230 VAC ozonator: P8 & P16

You should read ≈230 VAC.

3• Replace ozonator if you get a good voltage reading.

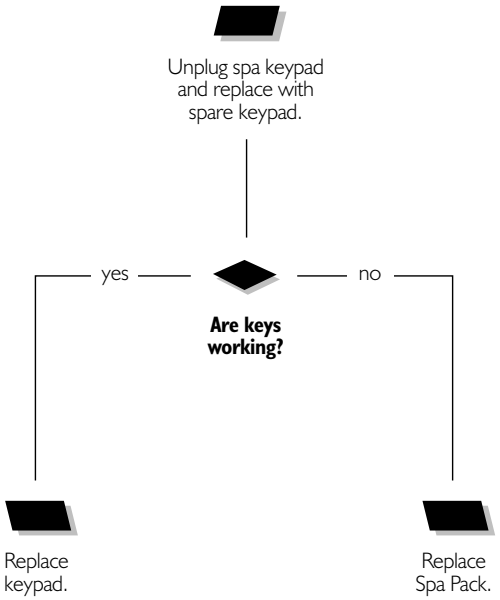


4• Replace ozonator fuse if voltage reading is not high enough.

5• Replace Spa Pack if you still do not get a voltage reading.

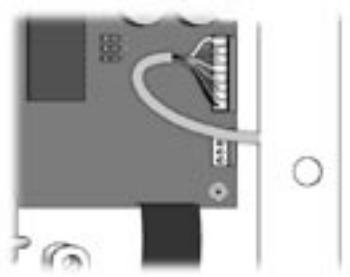
Keys Flow Chart

If any of the keys on the keypad do not seem to be working, follow Troubleshooting Flow Chart below to identify the problem:



Keys Aren't Working!

If any of the keys do not seem to be working, carry out the following tests to correct the problem:



1• Replace spa keypad with a spare keypad.

2• Verify if keys respond correctly.

3• If they do, replace keypad.

4• If they do not respond, replace Spa Pack.

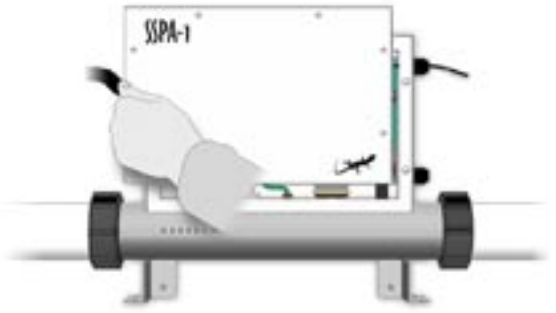
How To Replace The Spa Pack

When replacing an SSPA-1 Spa Pack, it is important to make sure to turn power off before proceeding.

Notes: 1) This procedure may also be used, in part, to replace the heater assembly.
2) In some cases, it may be necessary or more practical to remove and replace the Spa Pack and heater as one assembly.

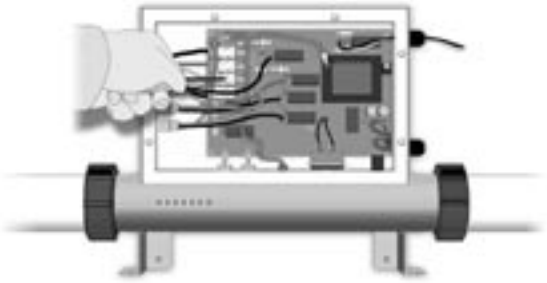
1• Unplug pump, blower and ozonator connectors.

2• Remove 6 screws from front pack cover.

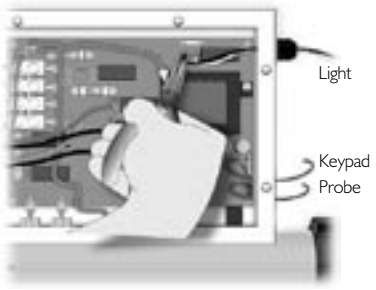


3• Remove Spa Pack cover.

How To Replace The Spa Pack



4• Disconnect power input cables.



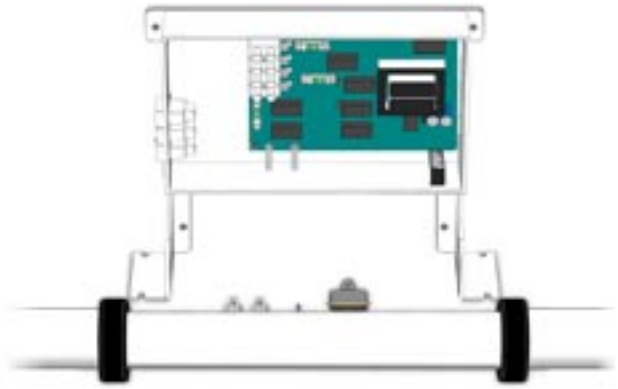
5• Disconnect light cables, keypad and temperature probe connectors.

7• Disconnect heater ground cable.

6• Disconnect pressure switch cable.

8• With wrenches, free the board blades by removing the 2 heater nuts.

How To Replace The Spa Pack



9• Slide the pack out of the heater barrel.

10• Check if high-limit sensor is properly in place in its slot and slide the new pack into position.

11• Connect heater to the board blades. It is important to hold both nuts when tightening. If you bend or twist the end of the element, you may damage it.

12• Reconnect heater ground cable and pressure switch cables.

13• Reconnect light cables, keypad and temperature probe.

14• Plug in pump, blower and ozonator connectors.

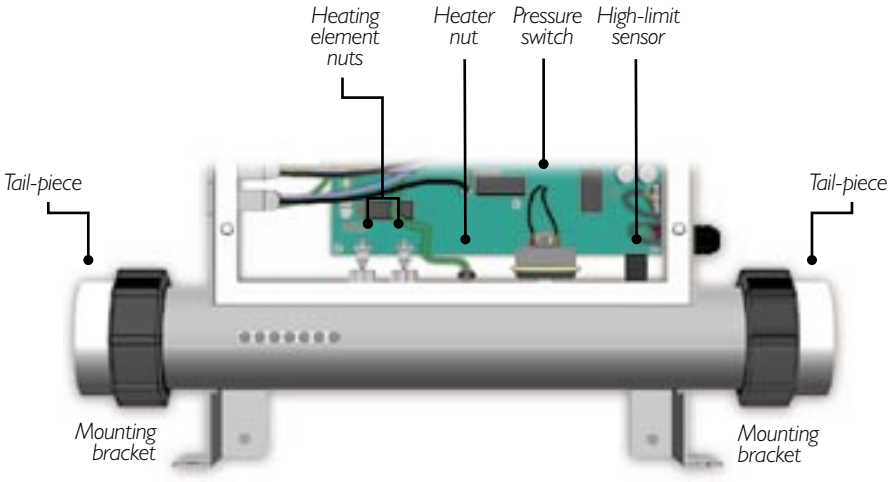
15• Reconnect power input cables.

16• Close pack cover.

How To Replace The Heater

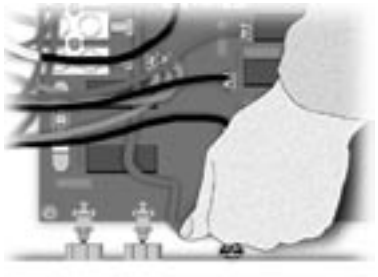
To replace the heater, proceed as follows:

Before you replace the heater, make sure the equipment is powered off!



Note: Before disconnecting the two tail-pieces, make sure all power input wires are disconnected and spa valves are closed!

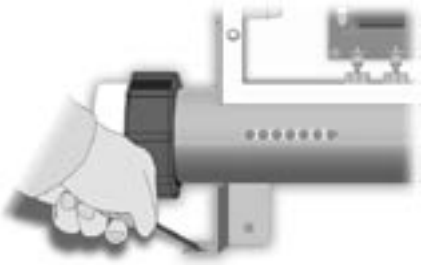
1• Disconnect the two wires at the top of the pressure switch, then unscrew and remove the switch.



2• Loosen the nut that fixes the heater (i.e., the center nut) and release the heater ground cable.

How To Replace The Heater

3• With the help of an open-end wrench, disconnect the two heating element nuts (remove only the two upper nuts). Do not touch the large nuts!



4• Loosen and remove the four screws that fix the left and right mounting brackets (two screws each), then release heater barrel from Spa Pack making sure not to damage the high-limit sensor.

5• Slide the new heater onto the two mounting brackets and fix these to the power box using the four screws.

When fixing the heater barrel, make sure the high-limit sensor is properly positioned.

6• Place the heater ground cable to the center nut and tighten the heater to the power box.

The heater nut must be firmly tightened because it also serves as a current collector in case of heater failure.

7• Reconnect the heating element to the two heater blades by tightening the nuts firmly. Use wrenches to avoid damaging the contact pins of the heating element.

8• Verify if the heater is properly connected to the board, then re-install the pressure switch and reconnect the wires (in no particular order).

How To Test a Fuse

The best way to test a fuse is to do a comparative test. Simply viewing a glass fuse will not always confirm that it is burned out. A weak cartridge fuse will still test fine when checked with an ohmmeter.

1• Select volts AC on your meter. If your meter is not autoranging, select range 0-300 volts.

2• Using your probes, touch or connect the black probe to the neutral connection of the power supply terminal block.

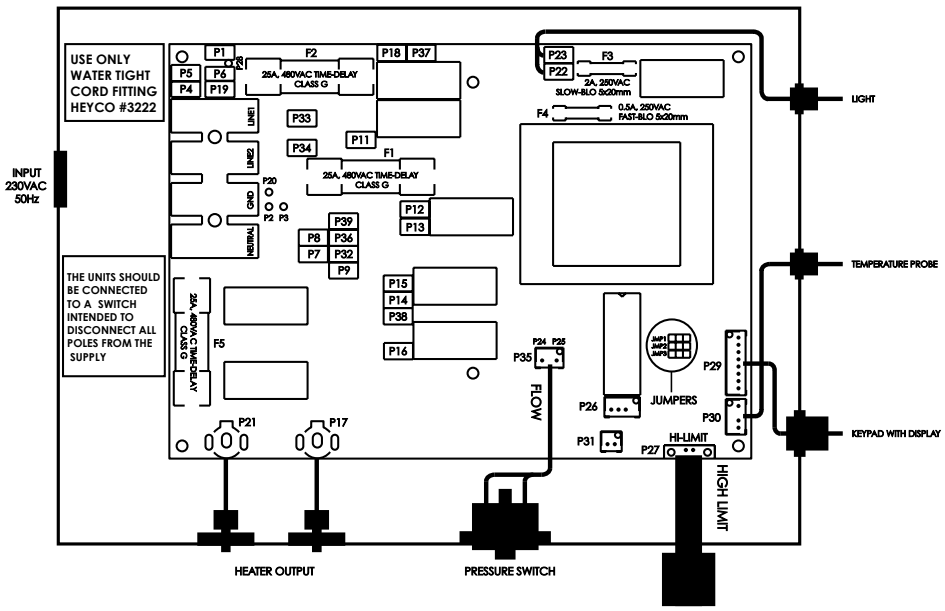
3• Use the red probe to touch both sides of the suspect fuse. Make sure to touch to the fuse holder, not the fuse body. This confirms that the contact fuse body to fuse holder is good.

4• Compare the voltage readings when you contact both sides of the fuse holder. These should be the same or more than 5% difference.

5• A difference of more than 5% indicates a weak fuse. If one of the readings is zero (0), the fuse is open and must be replaced.

Note: When replacing a fuse, always use a fuse of the same current rating as the one being replaced. Injury to you and/or those using the spa could occur by overfusing a circuit.

Wiring Diagram



Jet 1 Pump	
Voltage	240v
Green / Ground	P4
Black / Low Speed	P14
Brown / High Speed	P12
Blue / Neutral	P7

Ozonator	
Voltage	240v
Green / Ground	P5
Brown / Line	P16
Blue / Neutral	P8

Light	
White / 0 vac	P23
Black / 12 vac	P22

Jet 2 Pump	
Voltage	240v
Green / Ground	P6
Brown / Line	P11
Blue / Neutral	P9

Blower	
Voltage	240v
Green / Ground	P19
Brown / Line	P18
Blue / Neutral	P32

Heater	
Line	P21
Neutral	P17
Green / Ground	Ground

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